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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/597,794	08/08/2006	Hironori Kumagai	10873.1941USWO	6450

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EXAMINER

OSINSKI, MICHAEL S

ART UNIT	PAPER NUMBER
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2622

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/597,794	Applicant(s) KUMAGAI ET AL.	
	Examiner MICHAEL OSINSKI	Art Unit 2622	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 08 August 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-9 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-9 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 08 August 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>8/8/2006</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. Claims 1-9 are pending in this application.

Information Disclosure Statement

2. The information disclosure statement filed on 8/8/2006 is in compliance with the provisions of 37 CFR 1.97, and has been considered and a copy is enclosed with this Office action.

Foreign Priority

3. Acknowledgement is made of applicant's claim for foreign priority under 35 U.S.C. 119(a-d) based on JP2004-363868, filed on 12/16/2004, and on JP2005-154447, filed on 5/26/2005.

Claim Rejections – 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

5. ***Claims 1-3 and 5 are rejected under 35 U.S.C. 102(e) as being anticipated by Nonaka et al. (US Patent 7,162,151) [hereafter Nonaka] filed on 8/4/2004.***

6. As to claim 1, Nonaka teaches a multi-eye imaging apparatus (Fig. 1) that comprises a plurality of imaging systems comprising optical systems (11 and 16) and imaging elements (12 and 17) that have different optical axes, wherein the imaging systems include a first imaging system (11, 12, and 21) having pixel shifting means of an actuator (21) for changing a relative positional relationship between an image of a subject (110) formed on the imaging element (12) and the imaging element, and a second imaging system (16 and 17) in which a relative positional relationship between an image of a subject (110) formed on the imaging element (17) and the imaging element is fixed during time-series image capture (Col. 3, 29-53, Col. 4, 47-59).

7. As to claim 2, Nonaka teaches an image memory (19a) for accumulating a plurality of frames of image information captured in time series (Fig. 2, I0, I1) contained within a camera shake detection section (19) that compares the plurality of frames of image information accumulated in the image memory section with a comparison section (19b), moving direction calculation section (19c), and a moving amount calculation section (19d), and an image processing/forming section (22) that synthesizes the image signals contained within the image memory sections upon one another (Fig. 5, 24b), corresponding to combining the plurality of frames of images accumulated in the image memory (Col. 4, 9-46, Col. 6, 26-34).

8. As to claim 3, Nonaka teaches the change amount of the positional relationship by the actuator is determined based on the shake amount obtained by the shake detection section (19) (Col. 4, 29-59).

9. As to claim 5, the Nonaka reference discloses all claimed subject matter with regards to similar comments of claims 1 and 2. Additionally, Nonaka teaches a calculation control section (25) that calculates a magnitude of a parallax from images captured by the various imaging systems (Col. 7, 63-67, Col. 8, 1-6).

Claim Rejections – 35 USC § 103

10. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

11. ***Claim 4 is rejected under 35 U.S.C 103 as being unpatentable over Nonaka et al. (US Patent 7,162,151) [hereafter Nonaka] filed on 8/4/2004, as applied to claim 1, in view of Ono (Japanese Patent Publication 2001-012927) [hereafter Ono] published on 1/19/2001.***

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12. As to claim 4, Ono teaches an imaging device (Fig. 4) that comprises two optical imaging systems comprising of lenses (14 and 24) and image pickup elements (16 and 26). Image pickup element (16) is driven by an actuator (32) to compensate for camera movement, the movement amount of the actuator fixed to matching the movement of the lens so that the center of the lens and the image pickup element are aligned (Fig. 5) (Page 12, 0039-0040, Page 13, 0041-0042).

It would have been obvious to one having ordinary skill in the art at the time of invention to fix the change of the positional relationship between an image formed on an imaging element and the imaging element that is controlled by an actuator as taught by Ono with the multi-eye imaging apparatus of Nonaka because both prior art are directed towards imaging devices with multiple optical imaging systems where an optical system has an imaging element controlled by an actuator and because fixing the change to allow for consistent imaging of a subject onto an active region of an image sensor is well-known in the art and would ensure that images captured by the image sensor (12) are in optimal alignment with the imaging lens (11) to obtain an ideal image free from shaking effects.

13. ***Claim 6 is rejected under 35 U.S.C 103 as being unpatentable over Nonaka et al. (US Patent 7,162,151) [hereafter Nonaka] filed on 8/4/2004, as applied to claim 5, in view of Tamamura (US Patent 7,463,284) [hereafter Tamamura] filed on 11/15/2005.***

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14. As to claim 6, it is noted that Nonaka fails to teach an optimal image selecting means for selecting image information which is used in the combination of the image combining means.

On the other hand, Tamamura teaches a camera (Fig. 1) that combines images using an image composition unit (117) in order to form images free from image blur due to camera shake. Images captured by an image sensing unit (15) are processed by an image processor (112) and feature points of the image are extracted by a shift detector (113) and the coordinates of the extracted feature points are determined by a coordinate converter (114), the coordinates determining shift amounts between images. The images are then stored within an image storage unit (115) and combinations of stored images are selected by a selector (116) and subsequently combined by the image composition unit, and subsequently the size of the image comprising the combination of two previously stored images is calculated by an image size unit (118) and the calculated sizes for the synthesized images are compared by a comparator (120) that selects a synthesized image having the greatest size, aka the least amount of shake between the two images, and outputs that image to recording and display units (122 and 121) (Col. 3, 13-18, Col. 4, 3-41).

It would have been obvious to one having ordinary skill in the art at the time of invention to include a comparator to select image information to be used in a selected combination of image signals based on a detected amount of variation between the stored images as taught by Tamamura with the multi-eye imaging apparatus of Nonaka because both prior art are directed towards imaging devices that eliminate image

shaking effects and because it would allow the device of Nonaka to obtain a more accurate position displacement calculation for an image sensor to be moved by an actuator by further analyzing camera shake after an initial compensation value for the movement of the actuator has been calculated and the image sensor has consequentially been moved, and incorporating the parallax amount into the decision as to which combination of images is to be used would allow the device of Nonaka to increase the accuracy of the position displacement calculation for an image sensor by taking into account the distance between images formed on the various image sensors.

15. *Claims 7-8 are rejected under 35 U.S.C 103 as being unpatentable over Nonaka et al. (US Patent 7,162,151) [hereafter Nonaka] filed on 8/4/2004, as applied to claim 1, in view of Nakazono (Japanese Patent Publication 2003-134385) [hereafter Nakazono] published on 5/9/2003.*

16. As to claim 7, Nakazono teaches a camera (Fig. 1) that captures an image using a CCD imager (1) and using an image composition device (4) that comprises a motion vector detecting element (Fig. 2, 11, Fig. 3) that uses two pictures to discriminate subject images (Fig. 5) and determines a shake amount for the subject using a motion vector calculation part (Fig. 3, 23) and the two images used to determine a shake amount of the subject of the image are combined (Fig. 15) into an output image using a synthesizing means (Fig. 14, 92) (Page 11, 0056-0058, Page 12, 0059-0060, Page 16, 0073-0075).

It would have been obvious to one having ordinary skill in the art at the time of invention to discriminate subjects of an image and obtain shaking amounts of the identified subjects as taught by Nakazono with the multi-eye imaging apparatus of Nonaka because both prior art are directed towards imaging devices that eliminate image shaking effects and because obtaining shake amounts, or movement amounts, of a subject between two images is a well-known technique in the art and would allow the device of Nonaka to determine an image shake amount for an image's subject as opposed to the entire image in order to compensate for an image where the subject itself is moving as opposed to the physical camera, resulting in an image free from shaking or blurring effects.

17. As to claim 8, the Nakazono reference discloses all claimed subject matter with regards to similar comments of claim 7. Additionally, Nakazono teaches dividing image information into a plurality of blocks (Fig. 8) and obtaining a shake amount for a plurality of blocks using block setting means (Fig. 3, 22) (Page 13, 0064-0065).

18. ***Claim 9 is rejected under 35 U.S.C 103 as being unpatentable over Nonaka et al. (US Patent 7,162,151) [hereafter Nonaka] filed on 8/4/2004, as applied to claim 1, in view of Yu et al. (US Patent 6,611,289) [hereafter Yu] published on 8/26/2003.***

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19. As to claim 9, Nonaka teaches the optical photographing lens (11) forms a main image of a subject (110) onto an image sensor (12) that is processed to form a main image, and that the light receiving lens (16) receives reflected luminous flux from the subject and an image sensor (17) is used to form images based on the reflected luminous flux and subsequently these images are used to determine moving direction of the image sensor (12) (Col. 3, 42-53, 66-67, Col. 4, 1-8, 20-28).

Yu teaches a camera (Fig. 3) with a plurality of imaging systems having different optical axes are composed of an imaging system comprising of a lens (310) and an image sensor (302) for handling a red color, a lens (312) and an image sensor (304) for handling a green color, a lens (314) and an image sensor (306) for handling a blue color, and a lens (316) and an image sensor (308) for handling all colors of the visible light spectrum including the colors of the other imaging systems (Col. 4, 62-67, Col. 5, 1-39, 65-66, Col. 8, 59-61).

It would have been obvious to one having ordinary skill in the art at the time of invention to include separate and distinct imaging systems that each image a different RGB color and form a high-quality image and additionally include an imaging system that also images the RGB colors within a camera as taught by Yu with the multi-eye imaging apparatus of Nonaka because both prior art are directed towards imaging devices that include multiple imaging systems for imaging a single object and because camera's with such configurations are well-known in the art and would allow the device of Nonaka to produce a true color image with true resolutions free from image/camera shake effects by using the single RGB imaging system as the light receiving lens to

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detect camera shake and subsequently calculate movement amounts for the monochrome image sensors.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael Osinski whose telephone number is (571) 270-3949. The examiner can normally be reached on Monday to Thursday 9 a.m. to 6 p.m. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ngoc Yen Vu can be reached on (571) 272-7320. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/MO/
12/20/2008

*/Ngoc-Yen T. VU/
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